OPERATION MANUAL

RK-2001W4

SOLID FUEL FIRED
BOILER TEMPERATURE CONTROLLER

Version G830

Table of Contents.

1. Application.

Controller RK-2001W4 is a device designed for temperature control in solid fuel fired boilers equipped with:
- blower,
- central heating pump,
- domestic hot water pump, mixing pump or a pump charging the accumulative tank (optional),
- household thermostat or exhaust gases temperature sensor (optional),
- signalling device or an additional boiler (optional).

2. Connection.

Before connecting the controller to the power supply, check if: power cords of the controller, the blower and the central heating circulation pump are properly plugged in the appropriate slots at the back of the device. The boiler water temperature and the exhaust gases temperature sensors should be installed in a measurement openings of the boiler. The schematics of connecting the regulator is shown in picture 2.

CAUTION! Before plugging in the controller first check if the wiring system is properly grounded and if the screw terminals of the output connector are tightened.

CAUTION! The total power of the devices connected to the controller must not exceed 700W.

The unused outputs may remain disconnected.

3. Operation.

Turning on the controller is signalized by a brief switching on all the light indicators on the display to enable to check their status. After the regulator has been connected to the power supply, it returns to its most recent mode (before turning it off or power failure).

The front panel of the controller (picture 1) includes:

1 – power switch,
2 – boiler temperature and parameters indicator,
3 – boiler thermostat knob,
4 – Ok button used for programming activation and parameters confirmation,
5 – STOP button also used for parameters selection and alarm cancellation,
6 – START button also used for parameters selection.

Picture 1. Front panel of the RK-2001W4 controller.

The basic operation of the regulator depends on setting the desired temperature with the thermostat knob. The remaining functions are carried out according to the programmed parameters of the service mode. The change of thermostat parameters is shown on the display for a few seconds, e.g. [C 65] and defines the value of the boiler water temperature the regulator is going to reach.

ressing the START (6) button activates both the blower and the possibility of its control. The STOP (5) button allows the user to stop the work of the blower, e.g. in order to refuel the boiler. If the regulator is out of the user's mode, the temperature of the boiler water is shown on the display and the last symbol indicates the working mode status:

[50°-] - stands for the STOP mode
[50°C] is the WORK mode
[50°c] indicates maintaining the heating while in the WORK mode
[50°U] means heating the domestic hot water in SUMMER mode
[50°u] is maintaining the heating while in SUMMER mode
.[70°d] indicates the bacteria eradication mode – heating the domestic hot water up to 75°C

3.1. The method of determining the desired temperature of boiler water.

The temperature maintained in the boiler (the programmed one) depends on the working mode of the household thermostat input (the exhaust gases sensor) as well as on the additional pump working mode. Table 1 contains the list of all parameters values possible to set.

If the circulation system is equipped with the accumulative tank, the desired boiler water temperature equals the value set with the thermostat knob (3).

If the heating system is equipped with the domestic hot water tank, the higher of two component temperatures is accepted as the desired boiler water temperature – either the temperature needed by the central heating circulation or the boiler water temperature necessary to heat up the domestic hot water tank.

In all other cases (no additional pump and when the mixing pump is installed) the desired boiler water temperature is the same as the temperature needed by the central heating circulation.

The temperature necessary to heat up the tank is taken into account when the domestic water temperature is too low only and it equals the total of the programmed hot water temperature [u 50] and the value of its increase [uP 5].

The temperature needed by the central heating circulation is determined on the basis of the value set with the thermostat knob (3) and the household thermostat input status. If the exhaust gases sensor is connected, then the central heating temperature equals the value set with the knob. If the household thermostat is connected and its contacts are opened, the central heating temperature is the same as the minimum boiler temperature [L 45], and if its contacts are opened, the central heating temperature equals the value set with the knob.

Table 1. Methods of establishing the desired temperature of boiler water.

Thermostat input	**Additional pump working mode**			
	None [ur 0]	Domestic hot water [ur 1] lub [ur 2]	Mixing pump [ur 3]	Accumulator [ur 4]
Exhaust gases sensor	Set with knob	Of which higher: – Set with knob – Domestic water heating temperature	Set with knob	Set with knob
Thermostat contacts opened	Minimum	Domestic water heating temperature	Minimum	Set with knob
Thermostat contacts closed	Set with knob	Of which higher: – Set with knob Domestic water heating temperature	Setpoint knob	Set with knob

3.2. System with the exhaust gases sensor operation.

If the heating system has been equipped with the exhaust gases temperature sensor and the temperature of the boiler water approaches the desired value, the regulator will switch into the mode of stabilizing the boiler water temperature.

3.3. System with the household thermostat operation.

If the heating system is equipped with the household thermostat, the desired temperature of the boiler water depends on the status of its contacts (3.1.). As an addition the central heating pump work may, depending on the service settings, be influenced by the household thermostat.

4. Alarms.

The correctness of the inside circuits and the temperature sensors work is tested continuously. When a failure is detected, the information of the errors that has appeared is displayed and the adequate action is undertaken.

The **[FUEL]** caption when displayed indicates fuel demand alarm. After the boiler has been refuelled, the alarm can be cancelled with the STOP button.

The **[Hot]** caption is displayed alternately with the exhaust gases temperature e.g. [°410] means the temperature of 400°C has been exceeded by the exhaust gases. In such case the blower is turned off by the regulator (it is turned on during draught cycle only). The regular work is resumed after the temperature of the exhaust gases has decreased below 250°C.

The **[E 1]** error indicates that a failure in the boiler sensor circuit has occurred. The error will induce the blower to turn off and the central heating pump to turn on. After the reason for the alarm has been removed, it can be cancelled with the STOP button.

The **[E 2]** error indicates that the boiler overheating has occurred. The error will induce the blower to turn off and the central heating pump to turn on. The alarm can be cancelled with the STOP button after the boiler water temperature has decreased.

The **[E 8]** indicates that a failure of the additional sensor circuit has occurred. If the additional output operates in the domestic hot water pump working mode, then the topping up the hot water tank is ceased. When the output works as a mixing pump, the protection of the return temperature is turned off. If the additional pump is intended to charge the accumulative tank, then it is turned on permanently. It is not necessary to cancel the alarm manually (it is cancelled automatically after the reason for failure has been removed).

The **[E128]** indicates that a failure of the exhaust gases temperature sensor has occurred. In case of the alarm, the regulator operation is continued in the stabilizing the boiler temperature mode. The alarm does not need cancelling manually (it is cancelled automatically after the reason for failure has been removed).

When several errors occur at the same time, the total of their codes is shown on the display, e.g. the [E 3] caption indicates both failure of the boiler temperature sensor and boiler overheating have occurred.

5.Setting the user's parameters.

When you press the OK button briefly, the regulator enters the viewing and setting the user's parameters mode. It is possible to view the parameters with buttons marked with "+", "-". After the particular parameter has been selected, you can enter the changing mode of the given parameter by simply pressing the OK button – this is signalized with a blinking value of the parameter. Pressing the "-" or "+" button will introduce the change of the parameter. To confirm the newly set value, press the OK button; then the regulator enables the user to select the next parameter. If there is no need to change values of the parameters, then select [End] and press the OK button or wait about 1 minute – the regulator will exit the user's mode and the temperature of the boiler water will be shown.

Table 2. List of the user's parameters.

Display	Parameter	Min	Max	Jump	Producer's settings
C 45	Programmed boiler temperature	L65	H90	1°C	-
co C	Central heating pump working mode ('C' – WINTER, '-' – SUMMER)	C	-		C
cu u	Domestic hot water pump working mode ('u' – regular work, 'd' – bacteria eradication program)	u	d		u
u50°	Temperature measured with the additional sensor				
150°	The measured temperature of the exhaust gases				
End	Exiting the user's mode				

The first column of the table shows the exemplary indications of the display, the next columns: description of a parameter, the minimum and maximum values that may be set as well as the jump of the value during its setting. The last column includes values preprogrammed by the producer – one can return to them by selecting the [Prod] service function.

The programmed boiler temperature [C 45] – is the value of boiler water temperature the regulator is going to reach while in the WORK mode. It is set by turning the thermostat knob manually (3) and shown briefly on the display.

CAUTION! The value of the desired boiler temperature may be different from the one set with the thermostat knob. The detailed description has been included in 3.1.
differ from the value set by the knob. A detailed description is included in section 3.1.

5.2. Central heating pump work [co C] – the WINTER/SUMMER mode – the WINTER mode is indicated with the letter 'C' – then the rooms are heated by appropriate central heating pump control. Selecting the '-' value means the SUMMER mode has been introduced. Then the central heating pump is turned off and the

domestic hot water system or the accumulative tank only are supported by the regulator. If the additional pump is turned off or it works as the mixing pump, then there is no possibility of changing the WINTER/SUMMER mode (the parameter is not available).

CAUTION!!! If the heating system is not equipped with accumulative tank, then when a failure of the boiler sensor occurs, the temperature of the boiler water exceeds the maximum value or the boiler overheating takes place, the central heating pump will be turned on regardless of the working mode.

5.3. Domestic hot water tank working mode (bacteria eradication program) [cu u] – the regulator enables to activate the process of bacteria eradication in the domestic hot water tank manually. After selecting the 'd' value, the boiler is going to reach the temperature of 75°C in the domestic hot water tank. Once the temperature of 75°C in the domestic hot water tank is obtained, the bacteria eradication programme will be turned off automatically. The parameter is not available if the additional pump works in a mode other than the domestic hot water mode.

CAUTION! To prevent the users from being scalded, the option of bacteria eradication should be switched on at night time when the water is not taken from the domestic hot water tank.

5.4. The temperature measured with the additional sensor [u50°] – the parameter presents the temperature of the accumulative tank or the domestic hot water tank temperature. If the additional pump is turned off or operates in the mixing pump mode, then the parameter is not available.

5.5. The measured temperature of the exhaust gases [150°] – the parameter is available when the household thermostat input is switched to measurement of the exhaust gases temperature. In such case the above mentioned temperature is displayed.

6. Setting the parameters – service mode.

Holding the OK button for over 3 seconds will cause the regulator to enter the viewing and setting parameters of the service mode. To view the parameters use the buttons marked with '+', '-'. After you have selected the particular parameter, it is possible to enter the mode of change by pressing the OK button. This is signalized with the blinking of the set value. The change of the parameter will occur after pressing the '-' or '+' button. To confirm the set value, press the OK button. Then the regulator enables the user to select the next parameter. If it is not our intention to change the parameter value with the + or - buttons, then select [End] and press the OK button or wait about 1 minute – the regulator will leave the service mode and the temperature of the boiler water will be shown.

Table 2. Service parameters list.

Disp.	Parameter	Min	Max	Step	Factory default.
П100	Blower work capacity or maximum capacity when Пr 1.	1	100	1%	100
n 40	Blower minimum capacity.	1	100	1%	40
Пh 5	Ratio of blower speed change.	2	20	1	5
Пr 0	Automatic regulation of blower speed.	-, 0	10	1	0
Пn 5	Induced draught duration.	--, 5	60	1s	5
Пu 6	Draught interval duration.	1	99	1min	6
r 50	Blower maximum speed at ignition.	1	100	1%	50
rh 5	Hysteresis of ignition turn-off.	1	45	1°C	5
P 40	Temperature of central heating pump turn-on.	--, 20	70	1°C	40
Ph 2	Hysteresis of central heating pump turn-on.	1	40	1°C	2
Pc 2	30 second interval while turning on central heating pump .	--, 1	99	1min	2
ur 0	Sensor and additional pump working mode.	0	4	1	0
u 50	Additional pump operating temperature.	30	90	1°C	50
uh 5	Hysteresis of additional pump work.	1	30	1°C	5
uP 5	Increase in boiler temperature while heating domestic water.	1	20	1°C	5
L 45	Boiler minimum temperature.	30	65	1°C	45
H 85	Boiler maximum temperature.	80	95	1°C	85
h 2	Hysteresis of boiler temperature.	1	10	1°C	2
A 99	Hysteresis of boiler temperature.	90	99	1°C	99
Fd2h	Fuel shortage testing time with burning.	--, 1	99-4h	1min	2h
Fb2h	Duration of fuel demand testing in working mode.	--, 1	99-4h	1min	2h
Ar 0	Additional output: 0-FUEL, 1-ALARM.	0	1	1	0
c---	Temperature of exhaust gases/exhaust gases sensor turn-off.	---, 50	250	1°C	---
ch10	Hysteresis of exhaust gases temperature.	1	99	1°C	5
ct 5	Time constant of exhaust gases temperature stabilization.	1	99	1 min	5
cF10	Blower speed jump while stabilizing exhaust gases temperature.	1	20	1%	10
c̲ 90	Temperature of exhaust gases while detecting fuel demand.	30	150	1°C	90
Prod	Restoring producer's settings after pressing OK button.				
outП	Testing blower output.	outП	out1		
outP	Testing central heating pump output.	outP	out2		
outu	Testing additional pump output.	outu	out3		
outr	Testing additional output.	outr	out4		
End	Exiting service mode after pressing OK button.				

Examples of display indications are shown in the first column. The next columns contain: description of a parameter, the minimum and maximum values that may be programmed as well as the jump of a value while setting. The values preprogrammed by the producer can be found in the last column – it is possible to restore them by selecting the [Prod] option.

6.1. Parameters of blower work.

Blower maximum capacity [П100] – is the maximum value of capacity at which the blower can operate.

Blower minimum capacity [n 40] – is the minimum value of capacity at which the blower can work.

Changing the rotational speed of the blower ratio [Пh 2] – the parameter influences the way of decreasing the blower rotational speed when the temperature of the boiler water approaches the programmed one. For instance, setting the 4 value indicates the blower will be working with the [П100] maximum capacity if the regulator is in the stabilizing the boiler water temperature mode or in the WORK mode (while the exhaust gases sensor is turned off) and the temperature of the boiler water is 4°C lower than the programmed one. The increase in temperature will cause gradual slowdown in blower rotational speed to the [n 40] minimum capacity.

Automatic regulation of the rotational speed [Пr 0] – setting the parameter between '0-10' will induce the decrease in the blower rotational speed automatically while the temperature of the boiler water approaches the programmed one. If the parameter is set to '--', then the gradual regulation of rotational speed is not available and the blower works with the capacity set with the 'П' parameter. Setting the parameter between 0 and 10 indicates period of time (counted in minutes) during which the gradual increase in the blower rotational speed from the [n 40] minimum value to the [r 50] occurs. This makes the ignition run smoothly.

Induced draught duration [Пn 5] – is the period of starting the blower temporarily in order to remove the exhaust gases. Switching to '--' will cause the regulator to exit the option.

Duration of intervals between draughts [Пu 6] – is the period of time between draughts.

Blower maximum rotational speed while ignition [r 50] – the parameter defines the maximum capacity the blower can work while ignition. If the [Пr 0] parameter is set to '0', then the blower capacity during ignition is determined.

Ignition turn-off hysteresis [rh 5] – the parameter defines by how many degrees the stage of ignition is turned off before the temperature of the boiler water reaches the programmed value or (when the exhaust gases sensor is turned on) before the exhaust gases temperature reaches the programmed value. Exiting the ignition mode will result in the regulator switching to the working mode.

6.2. Central heating circulation pump working parameters.

Temperature of central heating pump turn-on. [P 40] – if the heating system is not equipped with the accumulative tank ([ur 0], [ur 2] or [ur 3]), then the parameter defines the level of the boiler water temperature at which the central heating pump can be turned on. If it is set to '--', then too low temperature will not affect the pump operation. However, it is turned on when the temperature of the boiler water exceeds the [H 85] maximum temperature.

If the heating system is equipped with the accumulative tank ([ur 4]) – then the parameter defines the value of the tank temperature at which the central heating pump can be turned on. If it is set to '--', then the accumulative tank temperature will not affect the pump operation.

Hysteresis of the central heating pump [Ph 2] – the parameter determines by how many degrees the temperature of the boiler water or the accumulative tank must be decreased below the temperature of turn-on so that the pump should be turned off.

Time of restarting the central heating pump [Pc 2] – when the STOP mode is on or the household thermostat circuit is opened, the pump is turned on for the period of 30 seconds so that the water of the heating circulation should be mixed. The parameter determines the time of restarting the pump. The '--' value means turning off the option.

6.3. The sensor and additional pump working modes settings.

The sensor and additional pump working modes [ur 0] – the parameter determines the working mode of the output controlling the additional pump and of the additional sensor input.

The **[ur 0]** value indicates the shortage of a sensor and additional pump. The sensor input may remain disconnected as it is not taken into account when testing failures.

The **[ur 1]** value indicates that the domestic water pump is connected to the additional output and the domestic water sensor is switched to the additional input. In the mode, the domestic water pump is turned on when the tank water temperature decreases by the [uh 5] hysteresis value from the programmed [u 50] value. After the tank water has been heated up to the temperature programmed in the [u 50] parameter or when the temperature of the boiler water is lower than the one measured in the tank, the pump is turned off. Also, when the boiler temperature decreases below the [L 45] minimum value, the domestic water pump will be turned off. In the [ur 1] mode the domestic water is prepared with priority, which means that while topping up the domestic water tank, the central heating pump is turned off.

Similarly, the **[ur 2]** value indicates the work of the additional input and output in the domestic water heating mode. The difference depends on the hot water being prepared with no priority, which means the central heating circulation pump is not turned off while the domestic water tank is being topped up.

The **[ur 3]** value indicates the mixing pump has been connected to the additional output and the return temperature sensor has been switched to the additional input. In the mode, when the boiler return water temperature decreases to the [u 50] programmed value of the return temperature, the mixing pump is turned off. The mixing pump is turned off when the return temperature increases by the [uh 5] hysteresis value from the [u 50] programmed value of the return temperature.

The **[ur 4]** value indicates the pump charging the accumulative tank has been connected to the additional output and the accumulative tank temperature sensor has been switched to the additional input. In the mode, when the temperature of the boiler water increases by the [uh 5] hysteresis value from the accumulative tank water temperature, the charging pump is turned on. The pump is turned off when the temperature of the boiler water is equal to or lower than the accumulative tank water temperature or when the temperature of the boiler water decreases below the [L 65] minimum value.

The additional pump operating temperature [u 50] – depending on the additional pump working mode the parameter indicates the domestic water programmed temperature or the return temperature.

The additional pump hysteresis [uh 5] – the parameter determines the hysteresis of the additional pump work.

The increase in the boiler temperature while heating the domestic water [uP 5] – the parameter is taken into account when the additional pump works in the domestic water heating mode. It indicates by how many degrees the maintained boiler temperature will be higher than the [u 50]desired one while charging the tank.

6.4. Setting the range of boiler work temperature.

Boiler minimum temperature [L 45] – indicates the minimum temperature that can be set with the thermostat knob.

Boiler maximum temperature [H 85] – is the maximum value of temperature that can be set with the thermostat knob.

Hysteresis of boiler temperature [h 2] – determines by how many degrees the temperature of the boiler water must be decreased from the programmed with thermostat so that the regulator should be switched to the mode of maintaining the temperature of the exhaust gases or to the WORK mode while the exhaust gases temperature sensor is turned off.

6.5. Preventing the boiler from overheating.

The temperature of boiler overheating [A 99] – defines the value of temperature which, when exceeded, causes the regulator to activate the alarm of the boiler overheating.

STB – the regulator is equipped with an additional, independent of the processor security against the overheating. When the temperature exceeds 95° C, the regulation mode is stopped by the blower being turned off and central heating pump being turned on. When the temperature is decreased below 89°C, then the blower and the pump will be turned on to restore the regular work. Applying the STB system allows the user to control the boiler work thoroughly and minimize the risk of overheating.

6.6. Testing the fuel demand.

Duration of testing the fuel demand at ignition [Fd2h] – the parameter determines the maximum period of time that may pass between turning on the WORK mode and ending the ignition stage. If the ignition cycle is not going to be finished before the programmed expiration, the fuel demand alarm will be activated.

Duration of testing the fuel demand in the working mode [Fb2h] – testing the fuel demand in the working mode is activated when the temperature of the exhaust gases decreases below the [c 90] value (while the exhaust gases sensor is on) or the temperature of the boiler water decreases below the [L 45] value (when there is no exhaust gases sensor). If the state is being maintained during the programmed time, the fuel demand alarm will be activated.

6.7. Multifunctional output.

Additional multifunctional output working mode [Ar 0] – the regulator has been equipped with an additional multifunctional output compatible with the modes given below:

parameter **[Ar 0]** indicates the control of an additional oil or gas boiler. After the regulator has been turned on with the power switch, the additional boiler is turned off and when the fuel demand in the solid fuel fired boiler occurs, it is turned on again. The option is useful in the heating systems where the solid fuel fired boiler is included in order to decrease the costs of heating. After the fuel demand alarm has been cancelled with the STOP button, the additional boiler is turned off again and the work of the regulator is resumed.

parameter [Ar 1] indicates that the additional output will be working as an alarm output to which a signalling device can be connected. Boiler sensor failure, error of overheating or fuel demand will cause the indicator to turn on.

6.8. Setting the parameters regulating the exhaust gases temperature.

The exhaust gases temperature/ the exhaust gases sensor turn-on [c ---] – the parameter determines by what temperature of the exhaust gases the blower rotational speed will be decreased. Setting the parameter to '---' will cause the sensor of the exhaust gases temperature to turn off. In such case the household thermostat should be connected instead of the sensor or its contacts should be closed.

Hysteresis of the exhaust gases temperature [c h10] – the parameter determines by how many degrees the temperature of the exhaust gases must be decreased so that the blower rotational speed should be increased.

Time constant of stabilizing the temperature of the exhaust gases [c t 5] – the parameter determines the duration of changing the blower rotational speed while stabilizing the temperature of the exhaust gases. If the exhaust gases temperature exceeds the value programmed in the [c ---] parameter, the regulator will start decreasing the blower rotational speed gradually up till the moment when the exhaust gases temperature drops below the set value. If the temperature of the exhaust gases decreases by the value of the set hysteresis, the regulator will start to increase the blower speed gradually.

Blower speed jump while stabilizing the temperature of the exhaust gases [c F10] – the parameter determines the value by which the blower speed is changed while stabilizing the temperature of the exhaust gases.

The temperature of the exhaust gases while detecting the fuel demand [c 90] – the parameter determines the level of the exhaust gases temperature below which the function of detecting the fuel demand is activated.

6.9. Testing the outputs.

To control the correct work of the regulator, it is possible to test the output systems controlling the blower, pumps and the additional boiler turn-on system. Selecting [outП] on the display and pressing the OK button will result in the blower being turned on, selecting [outP] with the OK allows button to turn on the central heating pump, selecting [outu] will cause the additional pump output to be turned on and choosing [outr] will cause the additional multifunctional output to be turned on.

6.10.Producer's settings.

The regulator enables the user to restore the standard settings introduced by the producer. Select [Prod] on the display and press the OK button to confirm it. When the option has been activated, the regulator enters the values of particular parameters given in table 3.

6.11. Exiting the service mode.

To exit the parameters setting mode, select [End] on the display and press the OK button. Also, if no buttons will be pressed for 1 minute, exiting the mode occurs.

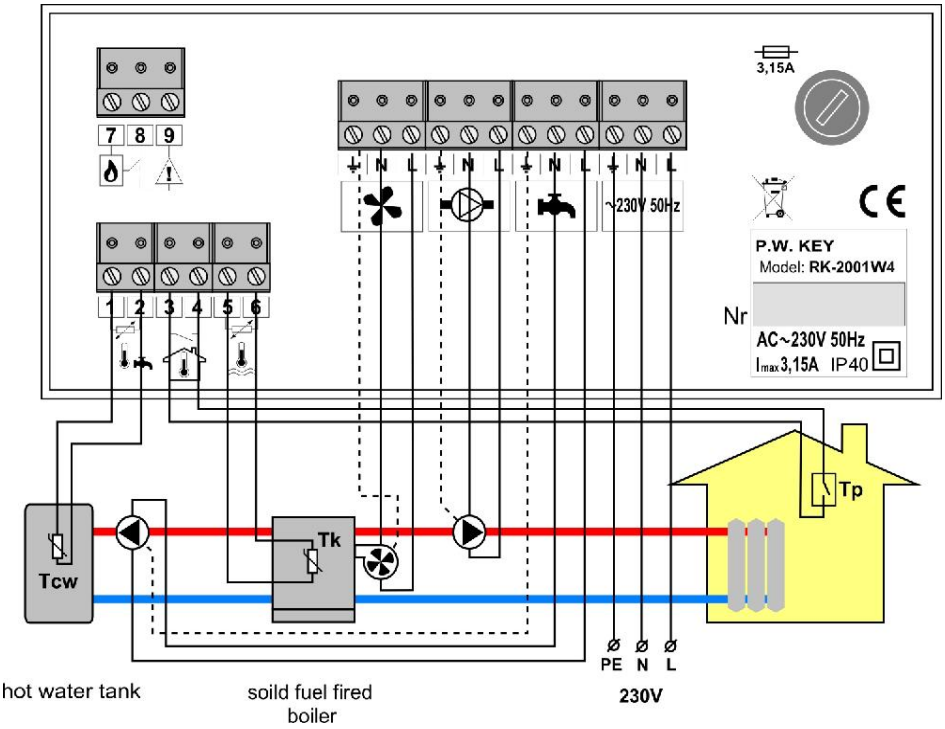
7. Controller disassembly.

When disassembly of controller is necessary, you need to:

- disconnect it from the power supply with the power switch,
- disconnect the boiler from the power supply,
- remove the controller from the boiler chamber,
- remove connectors and wiring from the regulator.

8. Technical specification.

Power supply	230V + 10%, 50Hz
Power consumption (blower and pump not included)	< 4VA
Boiler temperature measurement range	-9 - 109°C + 1°C
Exhaust gases temperature measurement range	-30-500°C + 1°C
Boiler temperature adjustment range	65-90°C + 1°C
Boiler programmed overheating protection	90-99°C + 1°C
Boiler equipment overheating protection	>95°C + 1°C
Pump turn-on temperature	20-65°C + 1°C
Total outputs rating	max 2A/230V



Picture 2. Schematics of connecting the RK-2001W4 unit.

Picture 3. Schematics of connecting the additional devices.

DECLARATION OF CONFORMITY

Manufacturer:Przedsiębiorstwo Wielobranżowe KEY
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hereby declares that the product:

RK-2001W4 Controller

is in conformity with provisions of the following directives:
73/23/EWG i 93/68/EWG (LVD 73/23/EEC + 93/68/EEC),
as superseded by Directive 2006/95/WE (EC Directive 2006/95/EEC);
89/336/EWG (Elektromagnetic Compatibility Directive 89/336/EEC),
as amended by Directive 93/68/EWG (EMC Directive 93/68/EEC)

on basis of compliance with the following harmonised directives:

PN-EN 55022:2006(U)
PN-EN 61000-4-2:1999+A2:2003
PN-EN 61000-4-3:2006(U)
PN-EN 61000-4-6:1999+A1:2003+IS1:2006
PN-EN 61000-4-4:2005(U)
PN-EN 61000-4-5:2006(U)
PN-EN 61000-4-11:2005(U)

PN-EN 60730-1:2002+A1:2006(U)A12:2004+A13:2005
PN-EN 60730-1:2005+A14:2006
PN-EN 60730-2-9:2006
PN-EN 61000-3-2:2006(U)
PN-EN 61000-3-3:1997+A1:2005+A2:2006+IS1:2006

Information on disposal

This appliance is marked according to the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

The symbol on the product, or the documents accompanying the product, indicates that his appliance may not be treated as household waste.
The appliance shall be handed over to the applicable collection point for used up electrical and electronic equipment for recycling purpose.

Ultimate disposal of the appliance shall follow according to applicable local regulations on waste utilization. For more information about disposal, utilization and recycling please contact your local authorities, household waste disposal service or the shop where you purchased the product.

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